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REMARKS

Claims 1-21 are pending in the present application. Claims 1, 9, 14, 15, 17, 18, 20, and 21 have been amended, Claim 13 has been cancelled, Claims 22-27 have been added, leaving Claims 1-12 and 13-27 for consideration upon entry of the present amendment.

Claim 1 has been amended to delete "at least one" before substoichiometric oxide of titanium and substitute "a" for consistency with the remainder of the claim. Applicants note that this amendment merely clarifies and does not narrow the claim.

Claim 9 has been amended to clarify that the claimed article forms "an electrochemical cell collector plate". Support for this amendment can be found in claim 9 as filed. Claim 9 has also been amended to identify the electrically conductive materials. Support for this amendment can be found in Claims 9 and 13 as originally filed.

Claims 14 and 15 have been amended to place them in independent form and to correct grammatical errors.

Claim 17, 18, 20, and 21 have been amended to add antecedent basis for "substoichiometric oxide of titanium", and to correct grammatical errors. Applicants note that this amendment merely clarifies and does not narrow these claims.

New Claim 24 has been added to further claim the present invention. Support for this amendment can at least be found in originally filed Claims 9 and 10.

New Claims 23 - 26 have been added to further define the invention. Support for these claims can be found in Claim 13 or Figure 7 as originally filed.

New Claim 27 has been added to further define the invention. Support for this claim can be found in Paragraph [0058].

The Specification has been amended, as explained in detail below.

No new matter has been introduced by these amendments. Reconsideration and allowance of the claims is respectfully requested in view of the above amendments and the following remarks.

Information Disclosure Statement

With regard to the Information Disclosure Statement filed on October 22, 2002, the Examiner questions item 22 because this item "is drawn to 22 pages of abstracts and it is unclear as to which of these documents are relevant". (Office Action Dated 12/01/03 (hereinafter

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"OA"), Page 2) Applicants respectfully request that the Examiner consider these references because they were known to the Applicants and they may be considered by the Examiner to be material to patentability. Applicants have submitted the abstracts to meet their duty of disclosure. The Examiner is respectfully requested to consider the abstracts and to provide Applicants with a supplemental PTO form 1449 wherein item 22 has been initialed.

Specification

The Specification has been updated because U.S. Patent Application 09/965,680 is now U.S. Patent No. 6,682,845.

Claim Rejections Under 35 U.S.C. § 102(b)

Claims 9 and 13 stand rejected under 35 U.S.C. § 102(b), as allegedly anticipated by U.S. Patent No. 4,745,301 to Michalchik, and Claims 9-11 and 13 stand rejected under 35 U.S.C. § 102(b), as allegedly anticipated by U.S. Patent No. 3,656,027 to Isley. Applicants respectfully traverse these rejections.

Claim 9 and the claims that depend therefrom are directed to an electrochemical cell collector plate. The collector plate comprises a first metal foil and a second metal foil wherein disposed between the first metal foil and the second metal foil is a layer comprising an integral mixture of an electrically conductive material and an elastomeric material. The electrically conductive material is selected from the group consisting of copper, niobium, zirconium, tantalum, titanium, steels, nickel, cobalt, precious metals, substoichiometric oxides of titanium, and alloys and mixtures comprising one or more of the foregoing electrically conductive materials.

Michalchik is directed to pressure sensitive electroconductive materials and a switch comprising the electroconductive material sandwiched between two metal electrodes. The electroconductive material contains carbon micro-agglomerates uniformly dispersed into the elastomeric composition. (Col. 7, ll. 9-11)

Isley is directed to an electrochemical cell having an electrically conductive, impervious connector. The connector comprises one metal substrate with an electrically conductive polymer on one side thereof. (Figures 1 and 2, item 14) Member 14 may comprise a metal substrate and a protective coating of an elastomer comprising carbon black particles. (Col 2, ll. 73-75)

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To anticipate a claim, a reference must disclose each and every element of the claim. *Lewmar Marine v. Variant Inc.*, 3 U.S.P.Q.2d 1766 (Fed. Cir. 1987). The present claims are directed to a collector plate comprising an integral mixture of an electrically conductive material and an elastomeric material disposed between two metal foils. The electrically conductive material is selected from the group consisting of copper, niobium, zirconium, tantalum, titanium, steels, nickel, cobalt, precious metals, substoichiometric oxides of titanium, and alloys and mixtures comprising one or more of the foregoing electrically conductive materials. Neither Michalchik nor Isley teach or suggest forming an electrochemical cell collector plate comprising two metal foils with an integral mixture of an elastomer and an electrically conductive material selected from the group consisting of copper, niobium, zirconium, tantalum, titanium, steels, nickel, cobalt, precious metals, substoichiometric oxides of titanium, and alloys and mixtures comprising one or more of the foregoing electrically conductive materials. Therefore, both Michalchik and Isley fail to teach at least one element of the present claims. Consequently, both Michalchik and Isley fail to anticipate the present claims. For at least these reasons, reconsideration and withdrawal of these rejections are respectfully requested.

Claim 19 stands rejected under 35 U.S.C. § 102(b), as allegedly anticipated by WO 00/39362. Based on the discussion of the rejection (which refers to "WO '851"), and the fact that WO 00/39362 does not have a Figure 4, Applicants believe that the Examiner is actually rejecting Claim 19 over WO 02/27851.

WO 02/27851 is the PCT application equivalent to U.S. Patent No. 6,682,845 to which the current application claims priority, and both the present application and WO 02/27851 claim priority to the same provisional application. Thus, WO 02/27851 is not a proper 35 U.S.C. §102(b) reference. For the foregoing reason, reconsideration and withdrawal of this rejection are requested.

Claim Rejections Under 35 U.S.C. § 103(a)

Claim 12 stands rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Isley in view of U.S. Patent No. 4,488,203 to Muranaka et al. Applicants respectfully traverse this rejection.

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Muranaka et al. are directed to an electrochemical double layer capacitor. A resistor plate for use in the capacitor contains a "heat fusible polymeric material such as polyethylene, polypropylene, butyl rubber, ethylene-propylene rubber and silicone rubber and a carbon black". (Col. 11, ll. 3-6)

In making the rejection, the Examiner states that "Isley does not specify the elastomeric material of claim 12", but "Isley teaches of using a broad number of elastomeric materials including butyl rubbers". (OA, page 4) The Examiner goes on to cite Muranaka for teaching "that both butyl rubber and silicon rubber materials can be used as the elastomeric component of the electrically conductive elastomeric material.... [with] the motivation for using silicone [being] that it is a known equivalent substitute for butyl rubber". (OA, page 5) Applicants disagree with the assessment of the teaching of Muranaka et al. and the alleged motivation. While Muranaka et al. teach the use of either butyl rubber or silicone rubber in a particular application, namely a resistor plate, Muranaka et al. do not teach that these elastomers are equivalent in all applications. Applicants disagree that silicone is an equivalent substitute for butyl rubber as an electrically conductive elastomeric material. Applicants respectfully request support for this contention.

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing that all elements of the invention are disclosed in the prior art; that the prior art relied upon, coupled with knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references; and that the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In Re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970); *Amgen v. Chugai Pharmaceuticals Co.*, 927 U.S.P.Q.2d, 1016, 1023 (Fed. Cir. 1996).

As stated above, Isley fails to teach or suggest forming an electrochemical cell collector plate comprising two metal foils with an integral mixture of an elastomer and an electrically conductive material selected from the group consisting of copper, niobium, zirconium, tantalum, titanium, steels, nickel, cobalt, precious metals, substoichiometric oxides of titanium, and alloys and mixtures comprising one or more of the foregoing electrically conductive materials. Muranaka et al. similarly fail to teach such an electrochemical cell collector plate, or even an

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electrochemical cell separator plate, and they fail to remedy the deficiencies of Isley. Additionally, Muranaka et al. as well as Isley fail to provide the motivation to combine these references as suggested in the OA. Consequently, there is no motivation to combine or expectation of success, and, even combined as suggested by the OA, these references fail to render the present application obvious. A *prima facie* case of obviousness has not been established.

For at least the foregoing reasons, reconsideration and withdrawal of this rejection are requested.

Claims 17 and 18 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Isley in view of Muranaka et al.. However, based on the discussion following the rejection, Applicants believe the Examiner is rejecting Claims 17 and 18 over Isley in view of U.S. Patent No. 5,281,496 to Clarke. Applicants respectfully traverse this rejection.

Clarke is directed to an electrochemical cell containing a titanium subdioxide electrode. In particular, Clarke teaches titanium suboxides "as electrode materials in liquid electrolytes". (Col. 2, l. 37)

In making the rejection, the Examiner states that Isley "does not teach of the material being a form of substoichiometric oxide of titanium". (Paper 8, page 5) Regarding Clarke, the Examiner states "Clarke teaches that it is known to use substoichiometric titanium oxide materials in electrochemical cells". (Paper 8, page 6). The Examiner then concludes that it would have been obvious to "modify the teachings of Isley by selecting the compression pad material to include substoichiometric titanium oxides since it would have improved electrical conductivity of the pad". (Paper 8, page 6). Applicants disagree that Clarke teaches improved electrical conductivity using substoichiometric oxides of titanium as compared to other materials. In fact, Clarke states that titanium suboxides have varying conductivity, and that, even though the "conductivities [are] relatively low compared with TiO₂, compositions of [Clarke] perform quite satisfactorily as *electrode materials in electrolyte solutions*". (Col. 4, ll. 14 – 19; *emphasis added*) Hence, Clarke does not generically teach the use of suboxides of titanium in electrochemical cells, but only as electrode materials, and does not teach that the titanium suboxide would improve the electrical conductivity.

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To render the present claims obvious, the Examiner must prove: (i) that all the claimed elements are disclosed in the prior art; (ii) that the prior art relied upon contains motivation to combined the references; and (iii) that the proposed modification has a reasonable expectation of success; all determined from the vantage point of the skilled artisan at the time the invention was made. In other words, it is not important what an artisan could do, but what an artisan would do with the information provided by the references, and not the present application.

As stated above, Isley fails to teach the electrochemical cell collector plate set forth in Claim 9. Clarke fails to remedy the deficiencies of Isley with respect to Claim 9. For at least this reason, all dependent claims from Claim 9 are allowable over Isley and Clarke, alone and in combination.

Additionally, there is no motivation or expectation of success of combining Isley and Clarke as suggested by the present application. Clarke at least fail to teach or suggest that titanium suboxides can be employed in an electrically conducting ionic insulating member as taught in Isley. Clarke only teach the use of titanium suboxides in an electrode.

A prima facie case of obviousness under 35 U.S.C. §103 requires that all elements of the claim, a motivation to combine or modify, and an expectation of success all be present in the prior art. In other words, it is not relevant what one of ordinary skill in the art *could* do, but what they *would* do. Isley teaches an electrically conducting ionic insulating member with a layer of elastomer having a high carbon black loading. Isley does not teach the use of substoichiometric oxides of titanium. Clarke teaches the use of substoichiometric oxides of titanium for electrodes and electrode substrates. Clarke fails to even mention other components of electrochemical cells besides the electrodes and electrolytes. Based upon the teachings of Isley and Clarke, if anything, and artisan *would* employ the electrically conducting ionic insulating member of Isley with the electrode of Clarke. There is no teaching or motivation to modify the electrically conducting ionic insulating member of Isley as suggested in the OA.

In order to attain the combination suggested in the OA, an artisan would have to begin with the electrically conducting ionic insulating member of Isley and assume that the materials provided therein need improvement. (No motivation) The artisan would then have to assume that the materials taught by Clarke for use in electrodes can be used with other electrochemical cell components. (No motivation and no expectation of success) The artisan would then need to determine that the other component in which the electrode materials of Clarke could be

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employed include electrically conducting ionic insulating members. (No motivation and no expectation of success) The artisan would next need to replace the conductive materials in the electrically conducting ionic insulating member taught by Isley with the electrode materials of Clarke. (No motivation or expectation or success) It is also noted, that once this was complete, the result would not be an *electrochemical cell collector plate*. Therefore, no *prima facie* case of obviousness has been established.

For at least the foregoing reasons, reconsideration and withdrawal of this rejection are requested.

Claims 1-4, 7 and 8 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over WO 00/39362 (hereinafter WO '362) in view of Clark.

In making the rejection, the Examiner states "The particles of the pressure pad are mixed and processed into a pad or sheet such a[s] by sintering or casting or molding (see page 11, lines 16, through page 14 lines 11)". (OA, page 7) The Examiner also states "the pressure pad produced from the materials is a unitary pad of the mixture of conductive and elastomeric materials". (OA, page 7) This teaching, in fact, appears not in WO '362, but in WO 02/27851 (hereinafter "WO '851"). Thus, the Examiner appears to be rejecting the present claims over WO 02/27851 in combination with Clark. Applicants respectfully traverse this rejection.

Claim 1 and the claims that depend therefrom are directed to an electrochemical cell comprising a first electrode; a second electrode; a membrane disposed between and in ionic communication with the first electrode and the second electrode; a first flow field in fluid communication with the first electrode and disposed opposite the membrane; a second flow field in fluid communication with second electrode and disposed opposite the membrane; and an electrically conductive pressure pad adjacent the first flow field and the first electrode, wherein the pressure pad comprises an integral mixture of a substoichiometric oxide of titanium and an elastomeric material.

WO '851 does have the teaching cited by the Examiner. As recognized by the Examiner, WO '851, however, does not teach the use of substoichiometric oxides of titanium. Regarding Clarke, the Examiner states "Clarke teaches that it is known to use substoichiometric titanium oxide materials in electrochemical cells". (OA, page 8) As elaborated upon with respect to the combination of Isley and Clarke, Applicants disagree that Clarke makes such a teaching.

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Clarke only teaches the use of substoichiometric oxides of titanium in an electrode. Clark does not teach the use of substoichiometric oxides of titanium in any cell component other than an electrode, and also fails to teach mixing a substoichiometric oxide of titanium with an elastomeric material as claimed in the present application.

An Examiner cannot establish obviousness by locating references that describe various aspects of a patent applicant's invention without also providing evidence of the motivating force which would have impelled one skilled in the art to do what the patent applicant has done. *Ex parte Levengood*, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. Int. 1993). The references, when viewed by themselves and not in retrospect, must suggest the invention. *In Re Skoll*, 187 U.S.P.Q. 481 (C.C.P.A. 1975).

Considering that WO '851 fails to teach or suggest the use of substoichiometric of titanium, that Clarke fails to teach or suggest the use of suboxide of titanium in any component other than an electrode and fails to teach mixing substoichiometric oxides of titanium with an elastomeric material, these references, alone and in combination, fail to establish a *prima facie* case of obviousness.

It is noted that, if the Examiner did intend to reject the claims over the combination of WO '362 and Clarke, Applicants submit that WO '362 fails to teach "an integral mixture" as presently claimed. Clarke does not remedy this defect. While Clarke teaches the use of substoichiometric oxides of titanium in electrodes, Clarke does not teach their use in any other cell component or that they can be combined with an elastomeric material.

For at least these reasons, reconsideration and withdrawal of this rejection are respectfully requested.

Claims 5 and 6 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over WO '362 in view of Clark and in further view of U.S. Patent No. 5,466,354 to Leonida et al. Applicants respectfully traverse this rejection.

Leonida et al teach a metal compression pad for an electrolysis cell. The compression pad comprises a "metal sheet comprising sufficient porosity to attain an elastic strain". (Col. 2, ll. 65-67) The cell may contain a compression pad having a porosity of "about 15% to about 85%". (Col. 3, ll. 7 – 8)

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In making the rejection, the Examiner refers back to the previous rejection. In making the rejection, the Examiner states "Leonida '354 discloses of a compression pad used in electrochemical cells having a porosity from about 15-80%". (OA, page 8) As is consistent with the above discussion, Applicants believe that the Examiner is rejecting Claims 5 and 6 over WO '851.

Leonida et al. do not cure the defects of the combination of WO '851 and Clarke discussed above. Leonida et al. teach porosities suitable for a metal sheet pressure pad, they do not discuss a pressure pad comprising an integral mixture of a conductive material and an elastomeric material disposed between two metal layers, or any properties or characteristics of such a pad. They further fail to teach combining substoichiometric oxides of titanium with an elastomeric material to form a pressure pad. It is noted that there is no motivation to combine these references as suggested and, even when combined, WO '851, Clarke, and Leonida et al. fails to render the present claims obvious.

It is noted that if, the Examiner did intend to reject the claims over WO '362, Clarke, and Leonida et al., Applicants submit that WO '362 fails to teach "an integral mixture" as presently claimed. Neither Clarke nor Leonida et al., remedy this deficiency.

For at least these reasons, reconsideration and withdrawal of this rejection are respectfully requested.

Claims 20 and 21 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over WO '851 in view of Clark. Applicants respectfully traverse this rejection.

Claims 20 and 21 are directed to an electrochemical cell comprising an electrochemical cell collector plate comprising "a layer disposed between a first metal foil and a second metal foil wherein the layer comprises an integral mixture of an electrically conductive material and an elastomeric material". These claims further claim that the electrically conductive material is a substoichiometric oxide of titanium.

In making the rejection, the Examiner states that it would have been obvious "to modify the teachings of WO '851 selecting the compression pad material to include substoichiometric titanium oxide since it would have improved the electrical conductivity of the pad". (OA, page 10).

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As stated previously and admitted by the Examiner, WO '851 does not teach the use of substoichiometric oxides of titanium, and Clarke only teaches the use of suboxides of titanium in an electrode. Clark does not teach "an integral mixture of at least one substoichiometric oxide of titanium and an elastomeric material" as claimed in the present application. Additionally, Clark does not teach that suboxides of titanium will improve the electrical conductivity of the collector plate. Hence, there is no motivation or expectation of success to combine the suboxide of titanium in Clarke into the pressure pad of WO '851. This position is explained in detail above in relation to the rejection of Claims 1-4, 7 and 8 under 35 U.S.C. §103. As is explained in detail above, if anything, what an artisan *would* do, is employ the electrode comprising a suboxide of titanium in the cell of WO '851. However, they would not combine a suboxide of titanium into the pressure pad of WO '851 since there is no teaching, suggest, motivation, or expectation of success. Reconsideration and withdrawal of this rejection are respectfully requested.

Allowable Subject Matter

Applicants appreciate the Examiner's indication that Claims 15 and 16 would be allowable if redrafted in independent form. Applicants further question the allowability of Claim 14 as Claim 14 was objected to in the Summary and not rejected.

Since Claims 14 and 15 have been amended to place them in independent form, and since Claim 16 depends from Claim 15, these claims are in condition for allowance.

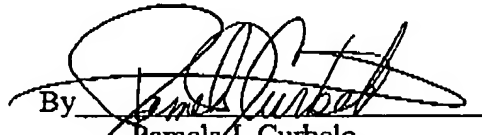
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It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and withdrawal of the rejections and objections, and allowance of the case are requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130.

Respectfully submitted,

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